## IN THE CLAIMS

Please cancel claims 51 through 68, 70, 71, and 73-286. Accordingly, claims 1 through 50, 69, and 72 are pending upon entry of this Preliminary Amendment. The purpose of this amendment is to economize on USPTO fees.

Listing of claims:

1. (original) A device for detecting cells or molecules on an electrode surface through measurement of impedance changes resulting from attachment or binding of said cells or molecules to said electrode surface, which device comprises:

a non-conductive substrate having two opposing ends along a longitudinal axis;

a plurality of electrode arrays positioned on said substrate, wherein each electrode array comprises at least two electrodes, and further wherein each electrode is separated from at least one adjacent electrode by an area of non-conductive material, said electrode having a width at its widest point of more than about 1.5 and less than about 10 times the width of said area of non-conductive material; and

electrically conductive traces extending substantially longitudinally to one of said two opposing ends of said substrate, and further wherein each trace is in electrical communication with at least one of said electrode arrays.

2. (original) The device according to Claim 1, wherein the substrate comprises glass,sapphire, silicon dioxide on silicon, or a polymer.

3. (original) The device according to Claim 2, wherein the substrate is configured as a flat surface.

4. (original) The device according to Claim 3, further comprising a plurality of receptacles, wherein each receptacle is disposed on the nonconductive substrate in a perpendicular orientation thereto, further wherein each receptacle forms a fluid tight container and least one container is associated with an electrode array on the substrate.

5. (original) The device according to Claim 1, further wherein up to half of the electrical traces extend to one end of the substrate, while the remaining electrical traces extend to the other end of the substrate.

6. (original) The device according to Claim 1, further comprising electrical traces between adjacent electrode arrays.

7. (original)The device according to Claim 1, wherein the electrodes of each electrode array are of equal widths.

8. (original) The device according to Claim 1, wherein each of the electrodes has a width of about 90 microns at its widest point.

9. (original) The device according to Claim 8, wherein a gap between adjacent electrodes is about 20 microns.

10. (original) The device according to Claim 1, wherein each electrode array comprises a plurality of evenly spaced electrodes.

11. (original) The device according to Claim 10, wherein each array of electrodes is organized in an interdigitated fashion.

12. (original) The device according to Claim 10, wherein each array of electrodes is organized in a concentric, sinusoidal, or castellated fashion.

13. (original) The device according to Claim 10, further wherein at least one bus is associated with up to half of the plurality of electrodes in each electrode array.

14. (original) The device according to Claim 13, wherein the bus is separated from said array of electrodes by an e area of nonconductive material.

15. (original) The device according to Claim 13, wherein the bus comprises an electrode which extends around up to half the perimeter of the electrode array.

16. (original) The device according to Claim 15, further comprising a plurality of receptacles, wherein each receptacle is disposed on the nonconductive substrate in a perpendicular orientation thereto, further wherein each receptacle forms a fluid- tight container and each electrode array on the substrate is associated with a fluid-tight container.

17. (original) The device according to Claim 16, wherein each container is shaped as a tube with opposing open ends, one end of which being in fluid-tight contact with the substrate.

18. (original) The device according to Claim 17, further wherein the diameter of the container at the end in contact with the substrate is smaller than the diameter of the opposing end.

19. (original) The device according to Claim 18, wherein the containers are arranged on the substrate in honeycomb fashion.

20. (original) The device according to Claim 19, wherein the outer wall of each container at its point of contact with the substrate is up to about 2.5 mm from the outer wall of each adjacent container.

21. (original) The device according to Claim 20, wherein the electrodes of each electrode array are of equal widths.

22. (original) The device according to Claim 21, wherein each of the electrodes has a width of about 90 microns at its widest point.

23. (original) The device according to Claim 22, wherein the width of the area of the nonconductive substrate between adjacent electrodes is about 20 microns.

24. (original) The device according to Claim 21, wherein the width of the area of the nonconductive substrate between adjacent electrodes is no less than 10 microns.

25. (original)The device according to Claim 1, further comprising an impedance analyzer electrically connected to all or a plurality of the electrically conductive traces at their termini on at least one end of the substrate.

26. (original) The device according to Claim 25, wherein the impedance is measured at a frequency ranging from about 1 Hz to about 1 MHz.

27. (original) The device according to Claim 1, wherein the electrically conductive traces within the substrate are covered with an insulating layer.

28. (original) The device according to Claim 1, wherein the electrically conductive traces are further disposed in a second plane of the substrate.

29. (original) The device according to Claim 19, wherein the containers together form a multi-well bottomless microtiter plate.

30. (original) The device according to Claim 29, wherein the number of wells present in the bottomless microtiter plate is a number between 6 and 1,536.

31. (original) The device according to Claim 19, wherein less than all of the containers are associated with an active electrode array.

32. (original) The device according to Claim 30, wherein less than all of the containers are associated with an active electrode array.

33. (original) The device according to Claim 1, wherein each of the electrical traces is up to 10 mm from each nearest adjacent electrical trace.

34. (original) The device according to Claim 19, wherein the diameter of one or more containers is, at the container end disposed on the substrate, between about 3 and 7 mm.

35. (original) The device according to Claim 1, wherein the electrodes are fabricated on the substrate by a laser ablation process.

36. (original) The device according to Claim 1, wherein at least one of the electrodes is individually addressed.

37. (original) The device according to Claim 1, further comprising: one or more capture reagents immobilized on the surfaces of the at least two electrodes in each electrode array, wherein the capture reagents are capable of binding target cells and/or molecules.

38. (original) A method for assaying target cells and/or molecules in a sample, which method comprises:

a) contacting one or more electrode arrays of the device of Claim 1 to a sample containing or suspected of containing target cells and/or molecules; and,

b) determining whether a change in impedance occurs between or among electrodes in one or more said electrode arrays;

wherein a detectable change of impedance is indicative of the presence of target cells and/or molecules in said sample, and capture of said cells and/or molecules on the surface of said one or more electrode arrays.

39. (original) The method according to Claim 38, wherein the sample is a biological sample comprising culture media sufficient for target cell growth.

40. (original) The device according to Claim 1, further comprising: an impedance analyzer and connection means for establishing electrical communication between the electrically conductive traces and the impedance analyzer.

41. (original) The device according to Claim 40, wherein the connection means comprises a mechanical clip adapted to securely engage the substrate and to form electrical contact with a trace.

42. (original) The device according to claim 41, wherein the mechanical clip is adapted to form an electrical connection with a printed-circuit board (PCB).

43. (original) The device according to Claim 1, wherein the target cells or molecules are captured on an electrode surface.

44. (original) The device according to Claim 4, wherein a perimeter of the container is contained within the outer perimeter of the electrode arrays.

45. (original) The device according to Claim 7, wherein each of the electrodes has a width between about 50 and about 100 microns at its widest point.

46. (original) The device according to Claim 7, wherein the width of the gap between adjacent electrodes is between about 10 and about 30 microns.

47. (original) The device according to Claim 13, further comprising a plurality of receptacles, wherein each receptacle is disposed on the substrate in a perpendicular orientation thereto, further wherein each receptacle forms a fluid-tight container, and at least one receptacle is contained within a perimeter formed by the buses at a plane of contact between the receptacles and the substrate.

48. (original) The device according to Claim 53, wherein each container is shaped as a tube with opposing open ends, one end of which being in fluid-tight contact with the substrate.

49. (original) The device according to Claim 48, wherein the diameter of the container at the end in contact with the substrate is smaller than the diameter of the opposing end.

50. (original) The device according to Claim 47, wherein the containers are arranged on the substrate in honeycomb fashion.

51 – 68 (canceled)

69. (original) A method of producing a device according to Claim 1, comprising:

a) providing a non-conductive substrate;

b) depositing an electrically conductive film on said substrate; and

c) patterning the electrically conductive film to make the plurality of electrode arrays using laser ablation of the conductive film.

70. (canceled)

71. (canceled)

72. (original) A device for monitoring cell-substrate impedance, which device comprises:

a) a non-conducting substrate;

b) at least two electrode structures fabricated to the same side of said substrate, wherein:

i) each of said at least two electrode structures has at least two electrode elements; and

ii) said at least two electrode structures have substantially same surface area; and

iii) said electrode elements and gaps between said electrode elements are arranged so that there is a high probability for cells to contact an electrode element when said cells are introduced onto said device; and

c) at least two connection pads located on said substrate,

wherein said device has a surface suitable for cell attachment or growth and said cell attachment or growth on said device results in detectable change in impedance between or among said electrode elements.

73 – 286 (canceled)